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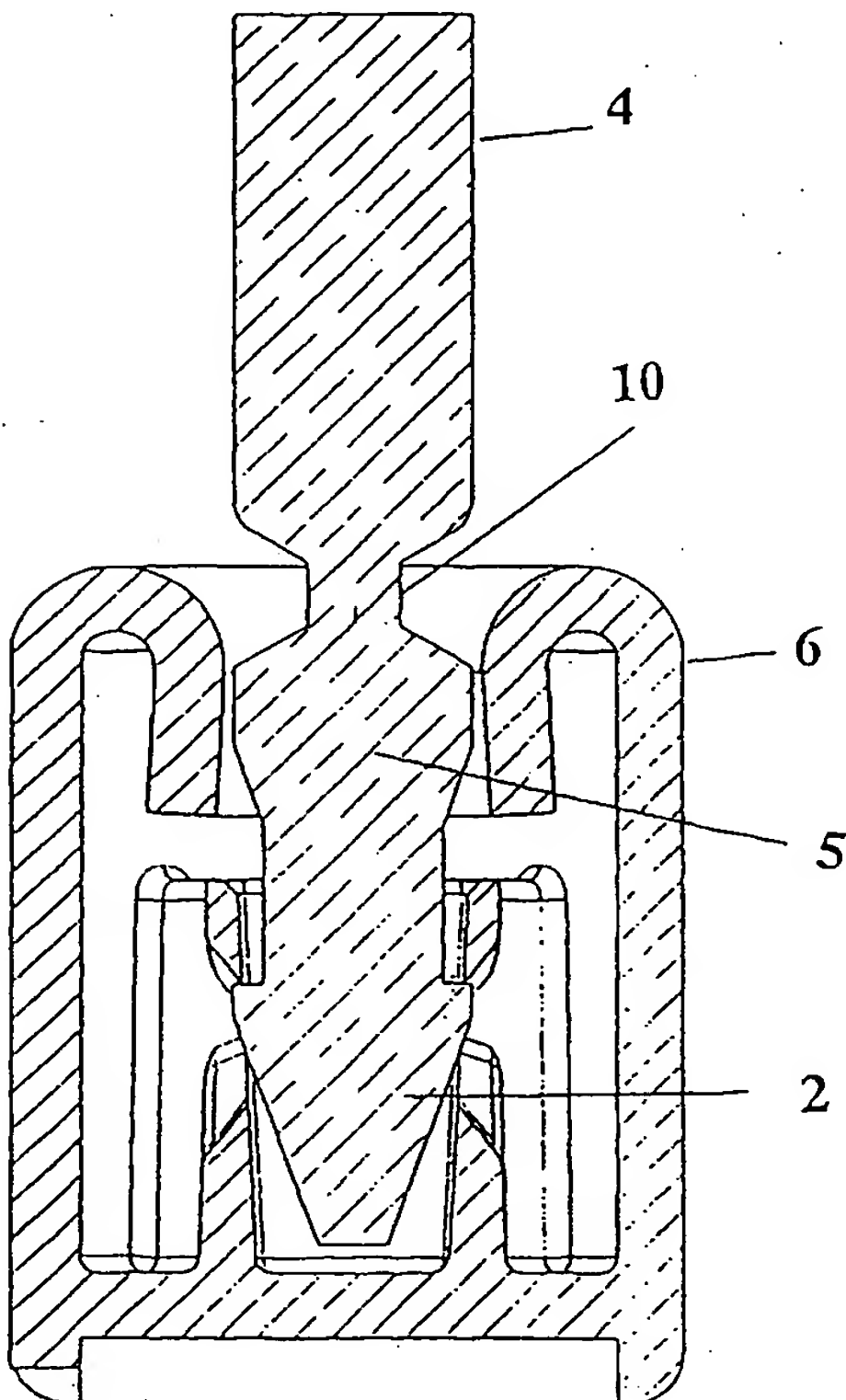
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(54) Title: SECURITY DEVICE



(57) Abstract: This invention relates to a security device which includes: an engagement head, and a receiver, wherein the receiver includes one or more at least partially flexible engagement elements adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than the diameter of the head, whereby in use said one or more flexible engagement elements are flexed to temporarily increase the diameter of the first enclosure and to admit the head into the enclosure, said engagement element or elements being adapted to resume their original shape and reduce the diameter of the first enclosure once the head is admitted to lock the head within the enclosure.

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## SECURITY DEVICE

### TECHNICAL FIELD

This invention relates to security devices used to lock or secure articles. Specifically the present invention may be adapted to provide a disposable low cost security device, which will also provide tamper evidence if interfered with. Reference throughout this specification will also be made to the present invention being formed or moulded integrally from a single piece of plastic. However, those skilled in the art should appreciate that other configurations and designs of the invention are envisioned and reference to the above only throughout this specification should no way be seen as limiting.

### 10 BACKGROUND ART

In many instances, equipment or products need to be secured against unauthorised tampering. For example, packaging used with food, beverages or medicinal products must be secured against unauthorised tampering before these products are purchased or used. The end user to be sure that the purity and quality of the product is still high and will not cause health problems if used.

However, because of large volumes of these products are sold, providing a dedicated and reusable locking or security mechanism for each product is not economically feasible.

Tamper evident systems are popular for these types of products and also in other situations where tampering with a product, equipment, machinery or needs to be detected. In such instances a tamper evident system which could provide an obvious indicator that a doorway, enclosure or access panel had been tampered with would be of advantage.

Cost considerations for such systems can also apply. A tamper evident means, which could be produced easily, quickly and inexpensively would be of an advantage in such instances.

For example, utility companies locate metering systems on their customer's properties. The meter may be enclosed in a housing that the customer can open to tamper with the meter and reduce their utilities cost. A security device with a tamper evident feature which could be used to

close and secure a meter housing, and which could also indicate that the meter housing has been opened would be of advantage.

5 A low cost tamper evident system would also be of use in international passenger aircraft. For security reasons, food and beverage trolleys or any other equipment that incorporates an enclosure needs to be checked and then sealed closed by the relevant authorities, either before departure or after arrival of the aeroplane. Security or customs authorities need to be able to detect if a trolley or other similar article has been interfered with or opened after inspection when it shouldn't have.

10 A security device that could be produced quickly and inexpensively in large volumes would be of advantage over the prior art. Specifically, a security device which could disable the operation of a mechanical system or which could indicate that a product or package, housing or entry point or panel had been tampered with would be of advantage.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

15 Further aspects and advantages of the present invention will become apparent from the ensuing description that is given by way of example only.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

20 Further aspects and advantages of the present invention will become apparent from the ensuing description that is given by way of example only.

#### DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided a security device which includes,

a receiver, and

25 an engagement head,

wherein the receiver includes one or more at least partially flexible engagement elements adapted to define an enclosure within the receiver, wherein the diameter of the enclosure is less than the diameter of the head,

5 whereby in use said one or more engagement elements are flexed to temporarily increase the diameter of the enclosure and admit the head into the enclosure,

said engagement element or elements being adapted to resume their original shape and reduce the diameter of the enclosure once the head is admitted to lock the head within the enclosure.

10 According to a further aspect of the present invention there is provided a security device substantially as described above wherein the receiver includes one or more at least partially flexible engagement element adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than the diameter of the engagement head,

15 the receiver including a body or housing section which is adapted to at least partially enclose the said flexible engagement elements and which is adapted to define a second enclosure adjacent to the first enclosure, said second enclosure having a diameter greater than the diameter of the engagement head,

wherein said second enclosure is adapted to receive an engagement head once the engagement head has been driven through the first enclosure formed by the flexible engagement element or elements.

20 In a preferred embodiment the present invention includes an engagement head and a receiver. The engagement head may be adapted to fit into or be held by the receiver to engage the security device and hence allow it to be used in security or tamper evident applications.

25 Preferably the receiver and engagement head are initially formed a short distance from one another, and are then engaged together when the invention is to be used to secure an article. Each of these components may be located remote from one another when initially formed as part of the security device.

In a further preferred embodiment the receiver may be shaped to at least partially enclose or lock onto the engagement head. The receiver may incorporate or form a cavity or enclosure that has a complementary shape to the engagement head and hence allows a tight locking fit of the engagement head into the receiver cavity.

- 5 In a further preferred embodiment the security device may be designed with its primary purpose being as a tamper evident means. In such an embodiment the security device may be constructed from inexpensive materials which can be easily broken to allow the security device to be removed from an article it is securing. However, the action of breaking the security device to gain access to an article will provide a tamper evident indicator. Preferably the security device  
10 must be destroyed or obviously damaged before it is possible to remove it from an article it is securing.

The present invention may be constructed from relatively weak materials, thereby allowing it to be formed as a low cost disposable product. The weak materials used in the construction of the security device will allow an unauthorised person to tamper with whatever is secured by the  
15 invention, but this tampering will be clearly obvious from damage to the security device. Damage to the security device provides evidence of tampering.

Reference throughout this specification will also be made to a security device configured in accordance with the present invention being constructed as a single integral component formed from moulded plastic material. However, those skilled in the art should appreciate that other  
20 configurations of the present invention are envisioned and reference to the above only throughout this specification should in no way be seen as limiting.

In a further preferred embodiment a weak point or element may be specifically designed or incorporated into the design of the security device to ensure that if it is forced, it will break the weak element provided. A weak element may be formed in some embodiments as a weak point  
25 in the design of components of the security device such as, for example, reducing the diameter of a portion used to mount the engagement head to a base or body of the security device.

In a preferred embodiment the security device may be formed from or created as a single integral component. Preferably, in such an embodiment the security device may be formed as a single



piece of moulded material such as plastic or other similar compound. Moulding or forming the security device as a single element substantially reduces the costs and time frames involved with its manufacture. Large volumes of the security device can be manufactured at low cost thereby allowing it to act as a disposable security or tamper evident measure. As the security device may be formed as a single element the manufacturing process is extremely simple, needing only the finished moulded device to be removed from its mould and to be packaged for forwarding on to its eventual end users.

In a preferred embodiment the receiver may be formed or designed to include a first cavity or enclosure that is adapted to receive the engagement head. In a further preferred embodiment the receiver's first enclosure may be formed or shaped by at least one partially flexible engagement element. An engagement element or elements may be adapted to define an enclosure within the receiver, wherein the enclosure formed has a diameter or a width less than the diameter or the width of the engagement head.

Reference throughout this specification will also be made to the receiver including a plurality of flexible engagement elements adapted to define a first enclosure within a receiver. However, those skilled in the art should also appreciate that a single engagement element may also be formed to perform in exactly the same manner as multiple engagement elements and reference to the above only throughout this specification should in no way be seen as limiting.

In a preferred embodiment the main body of the receiver may be formed as a substantially circular shaped housing, and the engagement head may be formed as a conical projection with the base of the conical projection being mounted directly onto the second or free end of the flexible extension. In such an embodiment four flexible engagement elements may be located within the receiver housing to form or define the substantially square collar which has a diameter less than the diameter of the widest portion of the engagement head. The collar shape formed by the flexible engagement elements may define a cavity or enclosure which need not be necessarily square or be shaped so as to closely correspond to the shape or profile of the engagement head. The flexible engagement elements need only define an enclosure within the receiver that has a smaller diameter or width than that of the engagement head.

In a preferred embodiment the receiver may include a further or second enclosure located underneath the engagement element or elements. This second enclosure may be adapted to receive an engagement head once it has been pushed past or through the collar formed by the engagement element or elements. Preferably this second enclosure may have a diameter greater than that of the engagement head, thereby allowing the engagement head to be easily pushed into the second enclosure once it has cleared the collar of the engagement element or elements.

In such an embodiment the engagement head may be formed from a first portion with a substantially wide or large diameter and a second portion with a smaller diameter. The second portion of the engagement head may have a diameter less than the diameter of the collar formed by the engagement element or elements. This configuration of the engagement head and receiver is adapted to lock the engagement head inside the cavities formed within the receiver once the widest part of the engagement head has been driven past the engagement element collar. Once the widest portion of the engagement head is in the lower or second enclosure of the receiver, the widest portion of the engagement head will butt up against the bottom of the engagement element collar if any attempt is made to pull the engagement element out from the receiver.

Preferably the engagement element or elements may be provided with a substantially flexible nature to allow the engagement head to be driven past them into first enclosure they define. As discussed above, this enclosure may lead onto a lower enclosure that extends out past the bottom of the engagement elements and has a width or a diameter larger than that of the engagement head. As those skilled in the art will appreciate, the flexible nature of the engagement element or elements will allow the engagement head to be driven past them into the bottom or lower regions of the receiver. The lower regions of this enclosure can then have a diameter greater than that of the engagement head which relieves any stress or force applied on the head by the receiver. Once the engagement head is driven past the flexible engagement elements they will then reform or spring back into their original shape or position, thereby locking the engagement head within the lower regions of the receiver. In this configuration the second or free end of the flexible extension is positioned level or in line with the flexible engagement elements of the receiver.

This configuration of the invention will lock the engagement head in the receiver once the engagement head has been pushed past and below the flexible extensions of the receiver. Any



attempt to then pull the flexible head out of the receiver will force the widest base element of the engagement head directly up against the receiver's flexible engagement element. The engagement elements may be designed so as to flex laterally only and therefore will strongly resist the forces applied by the engagement head. This will in turn place stress on the connection  
5 between the engagement head and any mounting components of the security device thereby which can break the connection between these two components if sufficient force is applied by someone trying to pull the head from the receiver.

According to another aspect of the present invention there is provided a security device which includes:

an engagement head, and

a receiver, and

a base, and

a flexible extension attached at a first end to the base and attached at a second end to either the receiver or the engagement head,

15 said receiver head, base and extension all being formed as a single integral component.

According to another aspect of the present invention there is provided a security device which includes,

an engagement head, and

a receiver, and

20 a base, and

a flexible extension attached at a first end to the base and attached at the second end to either the receiver or the engagement head,

wherein the receiver includes one or more at least partially flexible engagement elements adapted to define an enclosure within the receiver, wherein the diameter of the enclosure is less than the diameter of the head,

whereby in use said one or more engagement elements are flexed to temporarily increase the diameter of the enclosure and admit the head into the enclosure,

said engagement element or elements being adapted to resume their original shape and reduce the diameter of the enclosure once the head is admitted to lock the head within the enclosure.

According to yet another aspect of the present invention there is provided a security device which includes

an engagement head, and

a receiver, and

a base, and

a flexible extension attached at a first end to the base and attached at a second end to either the receiver or the engagement head,

wherein the receiver includes one or more at least partially flexible engagement element adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than a diameter of the engagement head,

the receiver including a body or housing section which is adapted to at least partially enclose the said flexible engagement element or elements and which is adapted to define a second enclosure adjacent to said first enclosure, said second enclosure having a diameter greater than the diameter of the engagement head,

wherein said second enclosure is adapted to receive an engagement head once the engagement head has been driven through the first enclosure formed by the flexible engagement element or elements.

According to a further aspect of the present invention there is provided a method of using a security device which includes:

an engagement head, and

a receiver, and

5 a base, and

a flexible extension attached at a first end to the base and attached at the second end to the receiver or the engagement head,

characterised by the steps of:

- 10 (a) manipulating the flexible extension to place the receiver in close proximity to the engagement head, and
- (b) inserting the engagement head into the receiver.

The present invention may also be adapted to provide a security device that either physically prevents tampering or deters tampering through provision of tamper evident features. The security device may when in use form a loop of material that can be used to secure elements, products or entry ports in a similar manner as can a padlock. For example, preferably the flexible extension used to form a loop of material to secure articles in the same manner as the shackle of a padlock. The flexible extension may be moved through or past portions of an article to be secured to place the engagement head in contact with the receiver and to secure an article.

15 In a preferred embodiment the present invention incorporates a base. The base may form the bulk of material used in the construction of the security device, and may form a platform or body to which other components of the invention may be mounted.

In a preferred embodiment the present invention also includes a flexible extension which is attached by a first end of the flexible extension to the base. A second end of the flexible extension may be attached to either the receiver or the engagement head, allowing the receiver or the engagement head to be moved with respect to the base when the flexible extension is flexed

25

or manipulated. The flexible extension can be used to mount either the receiver or the engagement head remote from the base.

5 Preferably the flexible extension may be formed from a thin length of material with two ends only. The first end of the length may be directly connected to the base while the second end (which can also be defined as the free end) may extend away from the base, but through flexing or manipulation of the material may also be pulled close to or into contact with the base if required.

10 In such an embodiment either the receiver or the engagement head may be attached to the second end of the flexible extension, while the remaining one of these components not attached to the flexible extension may be directly attached to the base. For example, in one embodiment the receiver may be connected to the second end of the flexible extension, and the engagement head may be directly mounted onto the base. The flexible extension can then be flexed and manipulated to place the receiver into contact with the engagement head on the base.

15 Reference throughout this specification will however be made to the engagement head being mounted or attached to a second free end of the flexible extension, and the receiver being mounted directly onto the base. However, those skilled in the art should appreciate that other configurations of the present invention are envisioned, and reference to the above only throughout this specification should in no way be seen as limiting.

20 As one skilled in the art should appreciate, the flexible extension can be manoeuvred through, past or around portions of the article to be secured to place the engagement head in contact with the receiver. The engagement head can then be locked inside the receiver cavity to secure the article. In this way, an element or component of an article to be secured may be held within a loop formed by the flexible extension and engagement head, and any damage caused to the security device will indicate that the article has been tampered with.

25 In a preferred embodiment a weak point may be provided at the attachment point of the engagement head to the second or free end of the flexible extension. In such an embodiment the diameter of the flexible extension may be reduced at a point near its free end so that this point of

the flexible extension will break before the engagement head is pulled from the receiver. If this portion of the flexible extension breaks this will provide evidence of tampering having occurred.

In another embodiment a weak point may not be provided at the attachment point of the engagement head to the second or free end of the flexible extension. For example, in one alternative embodiment a weak point may be designed within the length of the flexible attachment above or remote from the engagement head's attachment to the flexible extension. The provision of such a weak point somewhere along the length of that flexible extension means that the relatively thick free end of the flexible extension can be driven into or supplied to the receiver, leaving little room or leeway for anyone to try to lever the engagement head and attached extension out from the receiver.

In embodiments where a weak point is designed into the body of the flexible extension, the flexible extension may be severed at this weak point while leaving the tip of the flexible extension and attached engagement head within the receiver.

The present invention provides many potential advantages over the prior art. By having a security device which can be produced in large volumes from inexpensive materials this allows the security device to be formed as a disposable product. Furthermore, if any damage occurs to the security device through tampering this tampering will be obvious to anyone inspecting the security device, which can then be discarded due to its disposable nature.

The receiver for an engagement head discussed above provides a strong and secure connection for the engagement head, thereby causing other portions of the security device to break or be damaged before the engagement head is pulled from the receiver.

#### **BRIEF DESCRIPTION OF DRAWINGS**

Further aspects of the present invention will become apparent from the ensuing description that is given by way of example only and with reference to the accompanying drawings in which:

**Figure 1** shows a side view of the security device as configured in accordance with a preferred embodiment; and



Figure 2 shows an end cross section view along line C-C of Figure 1; and

Figure 3 shows a perspective view of the security device of Figure 1 with a cut-away view of the receiver shown; and

Figure 4 shows a close up view of the cut-away section of the receiver shown in Figure 3; and

Figure 5 shows a side cross section view of a security device as configured in accordance with a preferred embodiment where the security device is engaged by the engagement head being locked within the receiver, and

Figure 6 shows a side cross sectional view of a security device as configured in accordance with another embodiment where the security device is engaged with the engagement head being locked within the receiver.

#### **BEST MODES FOR CARRYING OUT THE INVENTION**

Figures 1 to 4 show a security device as configured in accordance with a preferred embodiment of the present invention. The security device in Figure 1 has yet to be used.

Those skilled in the art should appreciate that the design or configuration of the security device shown need not be seen as the only particular design of the present invention envisioned. For example in other embodiments the engagement head and receiver discussed above may also be incorporated into other types of security devices which do not necessarily include elements such as a flexible extension.

The security device 1 includes an engagement head 2 that is formed as a substantial cone or arrow shaped portion with a tapering tip. The widest portion of the engagement head is fixed to the free or second end 3 of a flexible extension 4 which is in turn attached to its first end to a base 5. The flexible extension 4 is manufactured with a set thickness so that it may be flexed or manipulated to adjust the position of the engagement head 2 with respect to the base 5.

Also mounted onto the base 4 is a receiver 6, which is adapted to receive and lock onto the engagement head 2 when the security device has been used or engaged.

When the security device is engaged the engagement head 2 is driven into and locked within the receiver 6 which will then secure the engagement head and flexible extension with respect to the base 5. In use, the flexible extension will be positioned so as to impede the operation of a piece of equipment or alternatively to prevent access to a product or piece of equipment. When engaged the only way a product or piece of equipment can be opened, activated or accessed is if the engagement head or flexible extension is pulled out and away from the receiver 6.

Figures 2 and 4 show more closely the features and construction of the receiver with side and perspective cross section views.

The receiver 6 includes a substantially cylindrical or circular housing 7 within which are located a number of flexible engagement elements 8. The engagement elements 8 are arranged so as to form a square collar that defines a first enclosure within the receiver. The receiver also includes a second enclosure 9 below the first enclosure formed or defined by the flexible engagement elements, which has a diameter or a width greater than the first enclosure. The construction and arrangement of the flexible engagement elements is such that they are able to flex outwards or laterally but will strongly resist any force applied to their undersides from in the vicinity of the second enclosure 9.

Figure 5 shows a side cross section view of the receiver and engagement head when the engagement head is locked within the receiver.

As discussed above, the receiver 6 is formed to include a substantially circular housing 7 within which is located a number of flexible engagement elements 8. The engagement elements 8 are configured or designed so as to form a collar that defines a first enclosure within the receiver. The diameter (d1) of this first enclosure is less than the (d3) of the engagement head.

The receiver housing is also adapted to form a second enclosure 9 underneath the engagement element collar where the second enclosure has a greater diameter (d2) than the widest section or diameter (d3) of the engagement head.

As one skilled in the art should appreciate, the flexible engagement elements may be formed with a thickness which will allow them to flex outwards as the tapering engagement head is driven

past them into the second enclosure 9. Due to the flexible nature of the engagement elements, they will spring back into the original positions to lock the engagement head within the receiver.

These flexible engagement elements may also be designed so as to strongly resist any vertical force being applied to pull the engagement head out of the receiver.

- 5 The flexible extension or engagement head may also be formed with a weakened connection point 10 which is designed to sever the attachment between the engagement head and flexible extension if a forceful attempt is made to pull the engagement head out from the receiver. If this weak connection point fails the engagement head will be retained within the receiver while the flexible is pulled out and away from the receiver. Severing of the engagement head from the  
10 second or free end of the flexible extension will then provide an obvious indication that the security device has been tampered with and that the article it has been used with is no longer secure.

- All the above components of the security device may be formed from a single piece of material, such as moulded plastic. The entire security device may be formed or manufactured in a single  
15 step or process allowing it to be produced in large volumes at low cost, and hence be used as a disposable device.

- Figure 6 shows a side cross section view of a receiver engagement head substantially similar to that shown with respect to Figure 5. However, in the embodiment shown in Figure 6 the weak connection point 10 between the engagement head 2 and the flexible extension 4 is located  
20 further up the length of the flexible extension. This places a relatively thick portion 5 of the flexible extension within the throat or main opening of the receiver 6. This thickened section of the flexible extension 4 will make it difficult for any small tools or levers to be inserted within the receiver 6 to be used to lever the head 2 out of the receiver 6 without breaking the heads connection to the flexible extension element 4.

- 25 Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof as defined in the appended claims.

WHAT WE CLAIM IS:

- 1 A security device which includes:  
  
an engagement head, and  
  
a receiver,  
  
5 wherein the receiver includes one or more at least partially flexible engagement elements adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than the diameter of the head,  
  
whereby in use said one or more flexible engagement elements are flexed to temporarily increase the diameter of the first enclosure and to admit the head into the enclosure,  
  
10 said engagement element or elements being adapted to resume their original shape and reduce the diameter of the first enclosure once the head is admitted to lock the head within the enclosure.
- 2 A security device as claimed in claim 1 wherein the receiver and an engagement head are initially formed a short distance from one another and engaged together to secure an  
15 article.
- 3 A security device as claimed in any previous claim wherein damage to the security device provides evidence of tampering.
- 4 A security device as claimed in any previous claim that is formed as a single integral component from plastic material.
- 20 5 A security device as claimed in any previous claim wherein the receiver is shaped to at least partially enclose or lock onto the engagement head.
- 6 A security device as claimed in any previous claim wherein the receiver incorporates a second enclosure which has a substantially complementary shape to the engagement head

and will allow the receiver to lock onto the engagement head when the engagement head is inserted into said second enclosure.

7 A security device as claimed in any previous claim that includes a weak element adapted to break when the security device is tampered with.

5 8 A security device as claimed in any previous claim wherein the first enclosure within the receiver is formed from a plurality of flexible engagement elements.

9 A security device as claimed in claim 8 wherein the first enclosure within the receiver is formed from four flexible engagement elements adapted to define a substantially square collar which has a diameter less than the diameter of the widest portion of the engagement head.

10 A security device which includes:

an engagement head, and

a receiver, and

15 wherein the receiver includes one or more at least partially flexible engagement element adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than a diameter of the engagement head,

the receiver including a body or housing section which is adapted to at least partially enclose the said flexible engagement element or elements and which is adapted to define a second enclosure adjacent to said first enclosure, said second enclosure having a diameter greater than the diameter of the engagement head,

20 wherein said second enclosure is adapted to receive an engagement head once the engagement head has been driven through the first enclosure formed by the flexible engagement element or elements.

11 A security device as claimed in claim 10 wherein the engagement head includes a first portion with a wider diameter than a second portion with a smaller diameter.



12 A security device which includes:

an engagement head, and

a receiver, and

a base, and

5 a flexible extension attached at a first end to the base and attached at a second end to either the receiver or the engagement head,

said receiver, base and extension all being formed as a single integral component.

13 A security device as claimed in claim 12 wherein the flexible extension forms a loop of material used to secure articles in the same manner as the staple of a padlock.

10 14 A security device as claimed in any one of claims 12 or 13 wherein the second end of the flexible extension is attached either to the receiver or engagement head to allow the receiver or the engagement head to be moved with respect to the base when the flexible extension is manipulated.

15 15 A security device as claimed in claim 14 wherein the flexible extension is moved through or past portions of an article to be secured to place the engagement head in contact with the receiver and to secure the article.

16 16 A security device as claimed in any one of claims 12 to 15 wherein the second end of the flexible extension is attached to the engagement head and the receiver is attached to the base.

20 17 A security device as claimed in any one of claims 12 to 16 wherein a weak element is formed in close proximity to the second end of the flexible extension.

18 18 A security device as claimed in any one of claims 12 to 17 wherein the receiver includes a main body portion formed as a substantially circular housing and the engagement head is formed as a substantially conical projection where the base of said conical projection is  
25 mounted on the second end of the flexible extension.

19 A method of manufacturing a security device characterised by the steps of:

(a) forming an engagement head, and

(b) forming a receiver, and

(c) forming a base, and

5 (d) forming a flexible extension attached at a first end to the base and attached at a second end to either the receiver or the engagement head,

wherein said receiver, base and extension are all formed from a single integral component.

20 A method of forming a security device as claimed in claim 19 wherein the security device  
10 is moulded from plastic material.

21 A method of using a security device which includes:

an engagement head, and

a receiver, and

a base, and

15 a flexible extension attached at a first end to the base and attached at the second end to the receiver or the engagement head,

characterised by the steps of:

(c) manipulating the flexible extension to place the receiver in close proximity to the engagement head, and

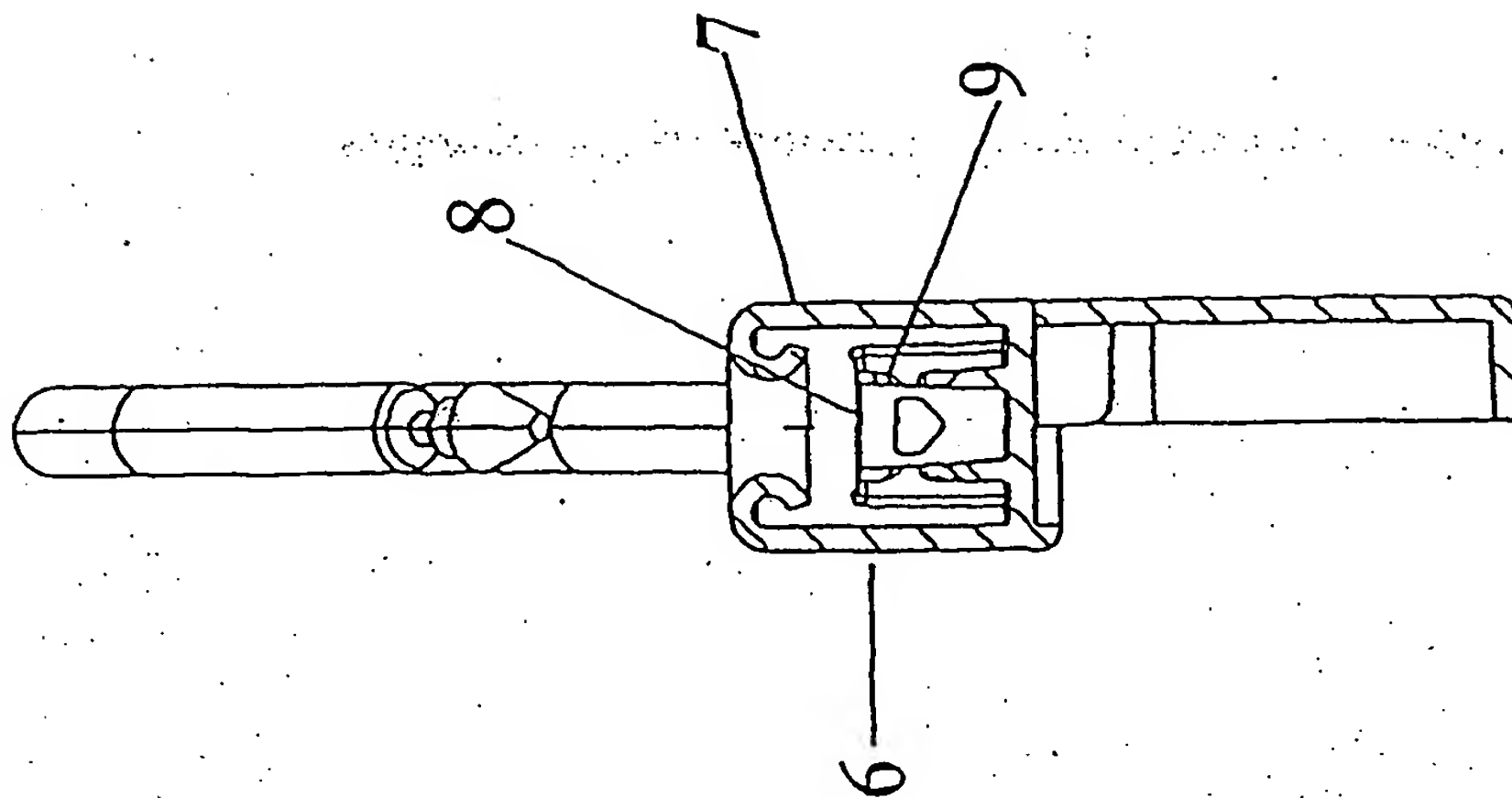
20 (d) inserting the engagement head into the receiver.

22 A security device substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.

- 23 A method of manufacturing a security device substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.
- 24 A method of using a security device substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.

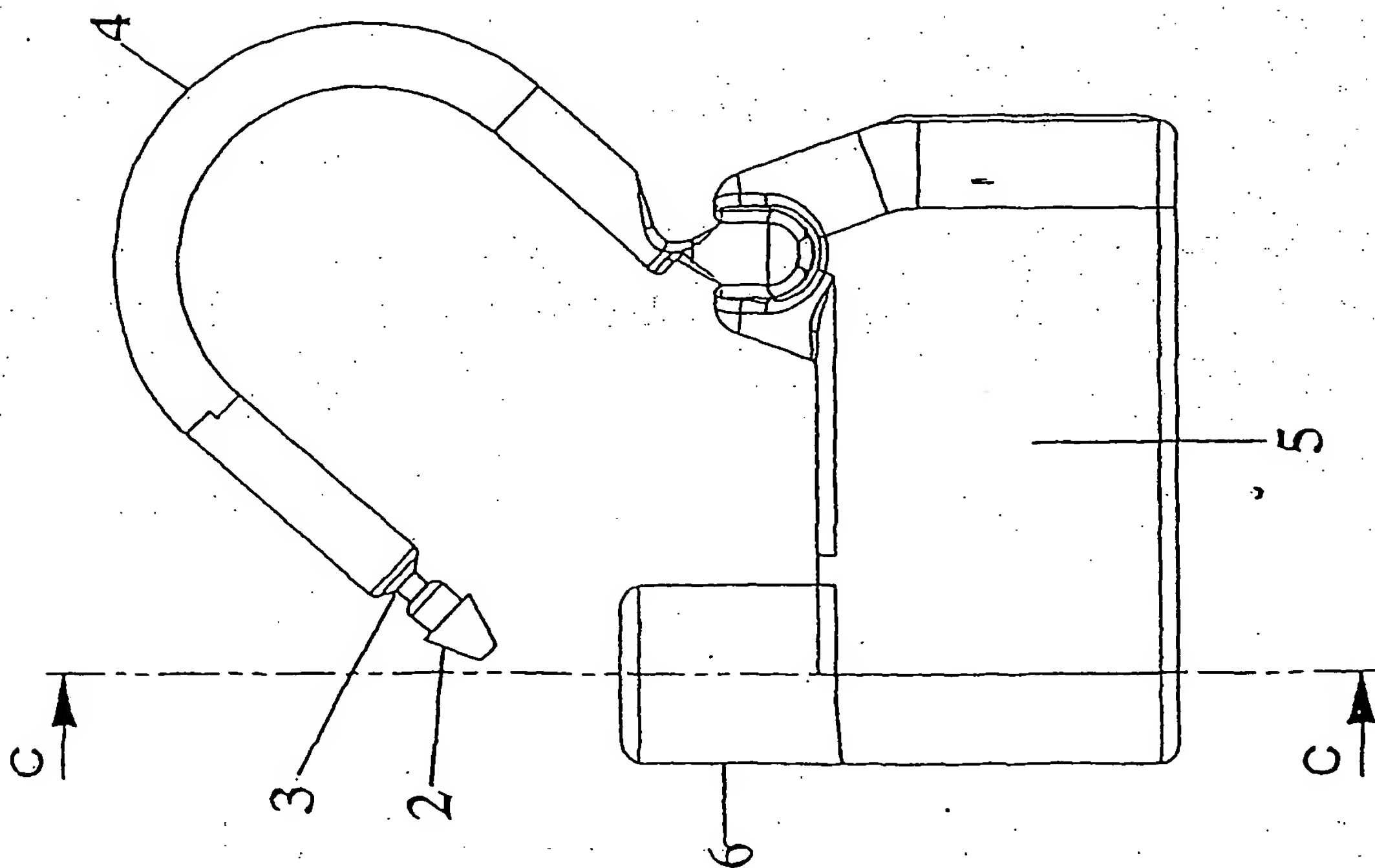
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FIGURE 2



SECTION C-C

FIGURE 1



2/4

FIGURE 3

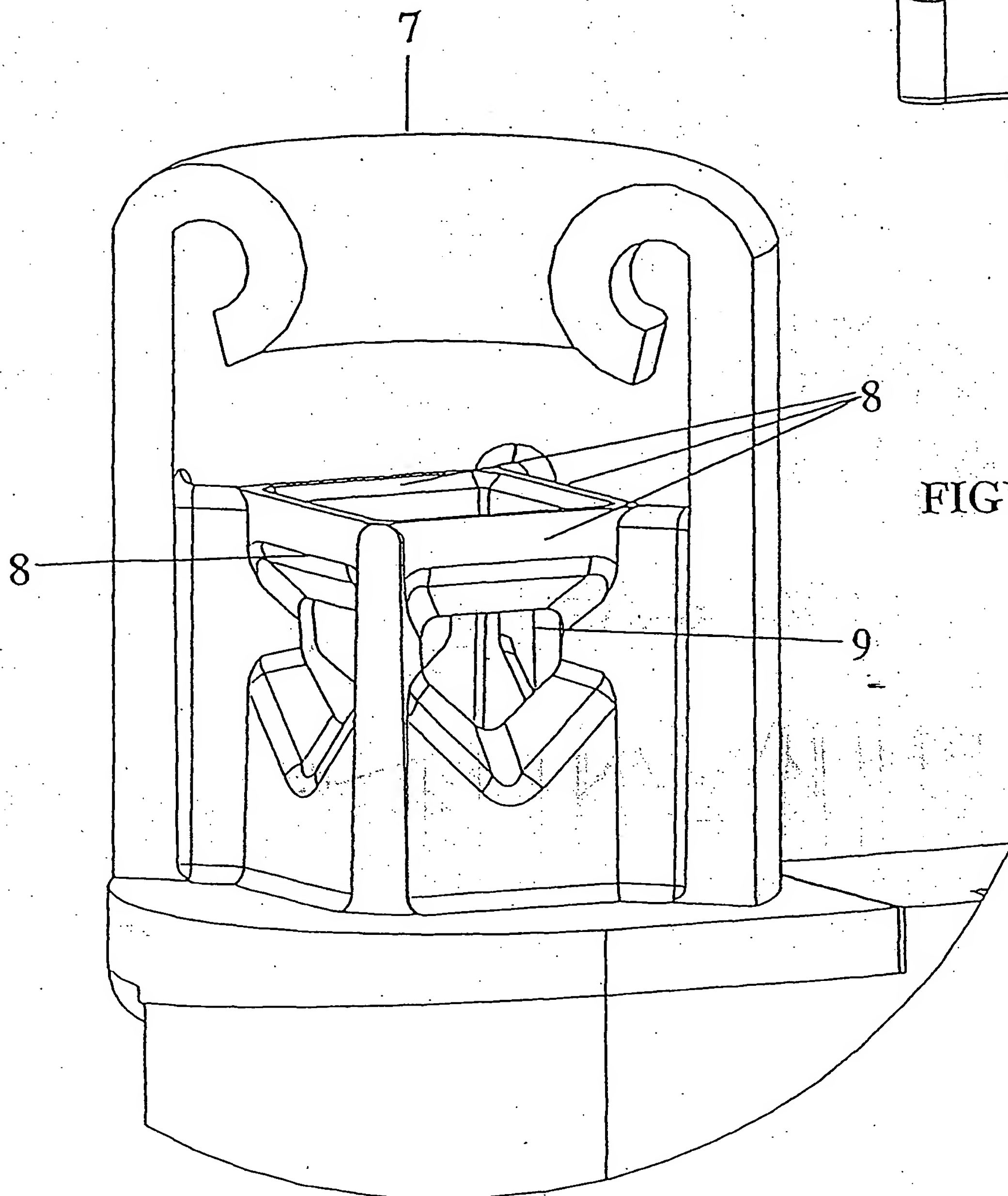
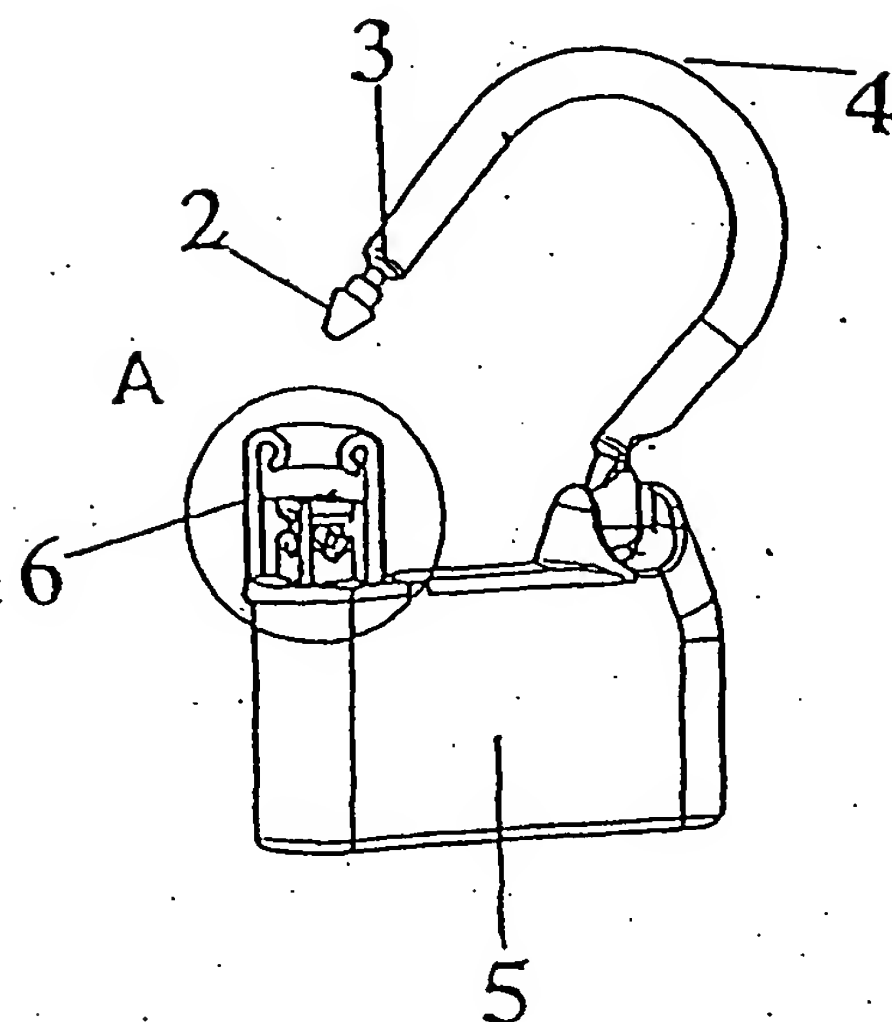


FIGURE 4



FIGURE 5

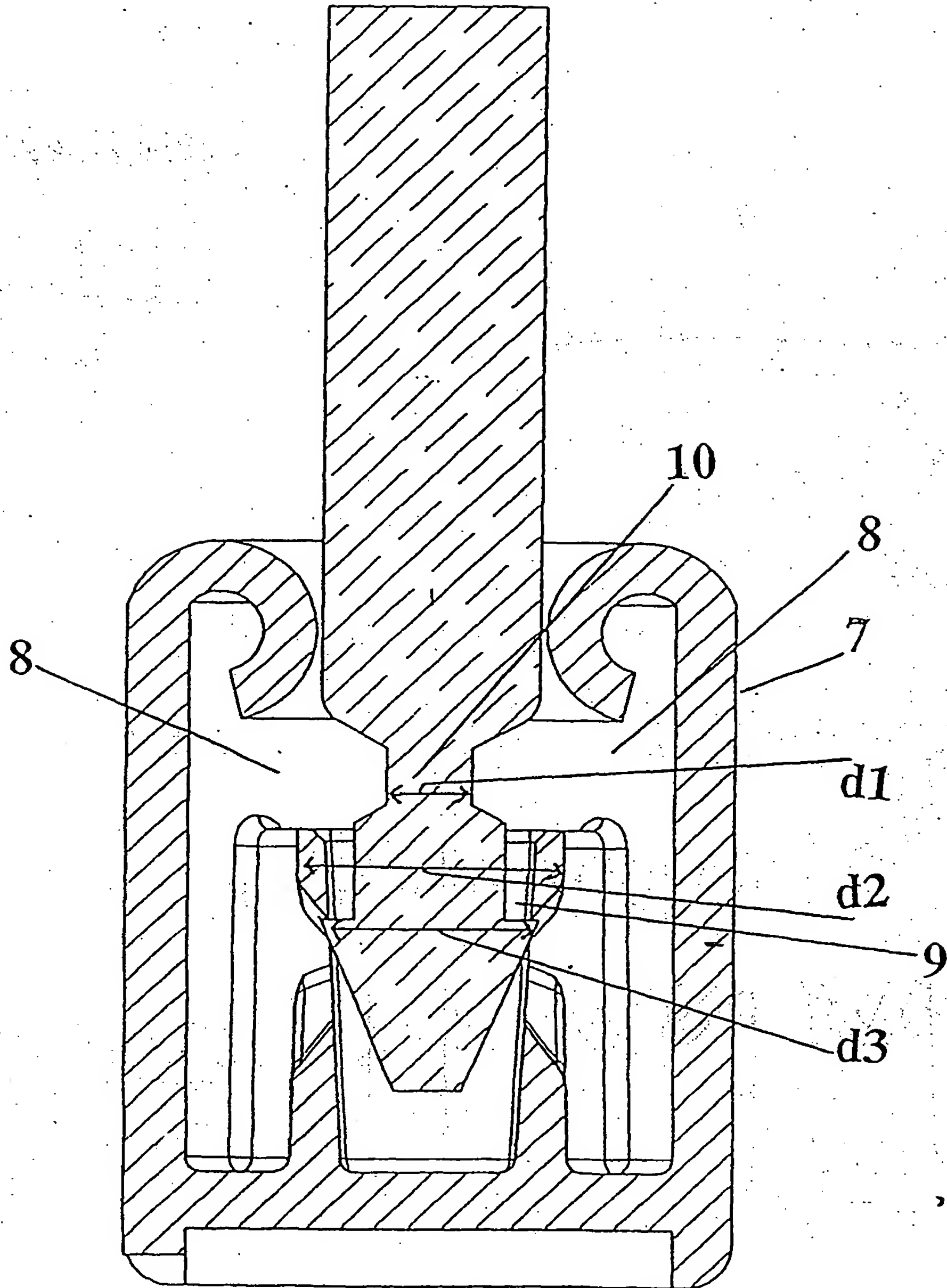
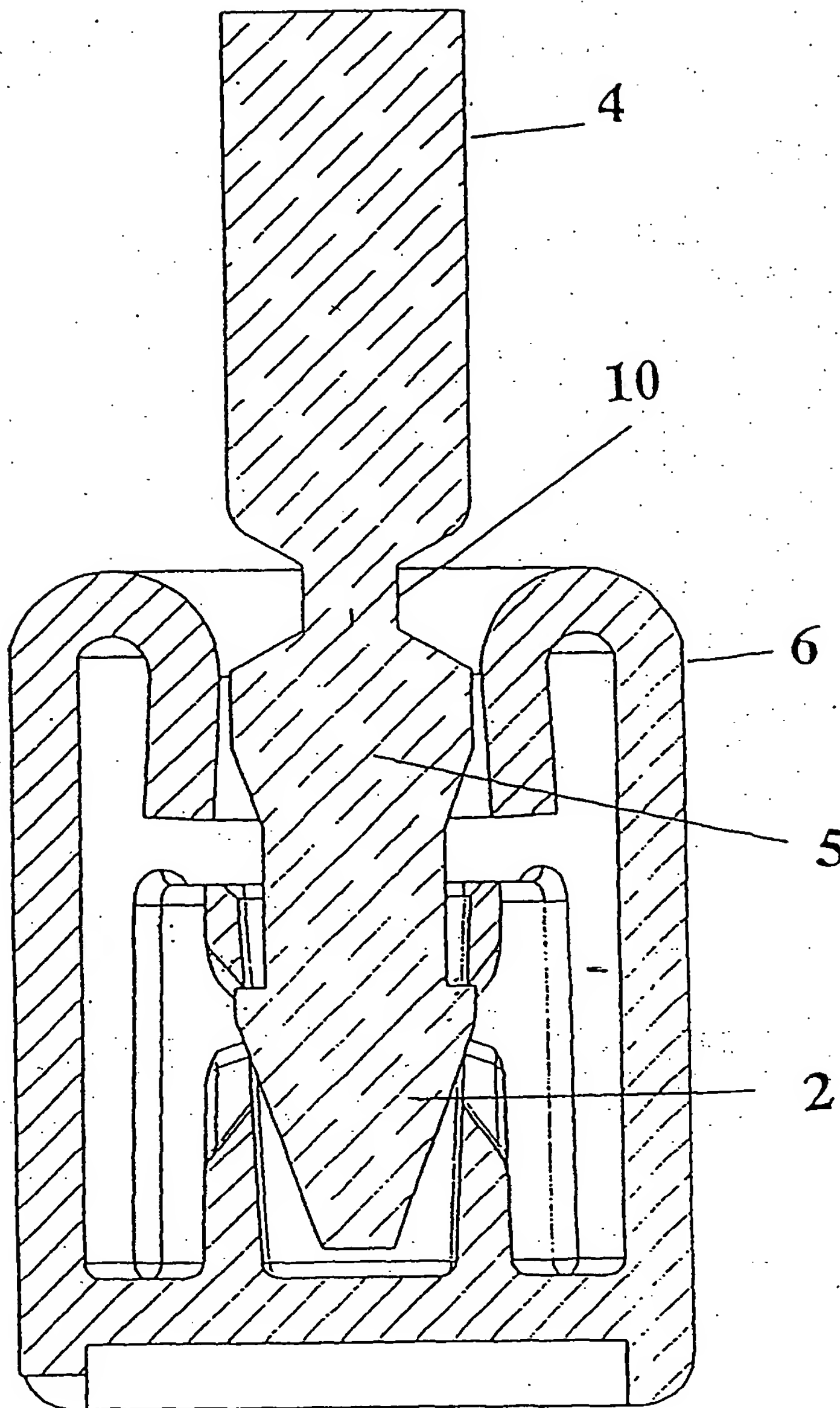


FIGURE 6



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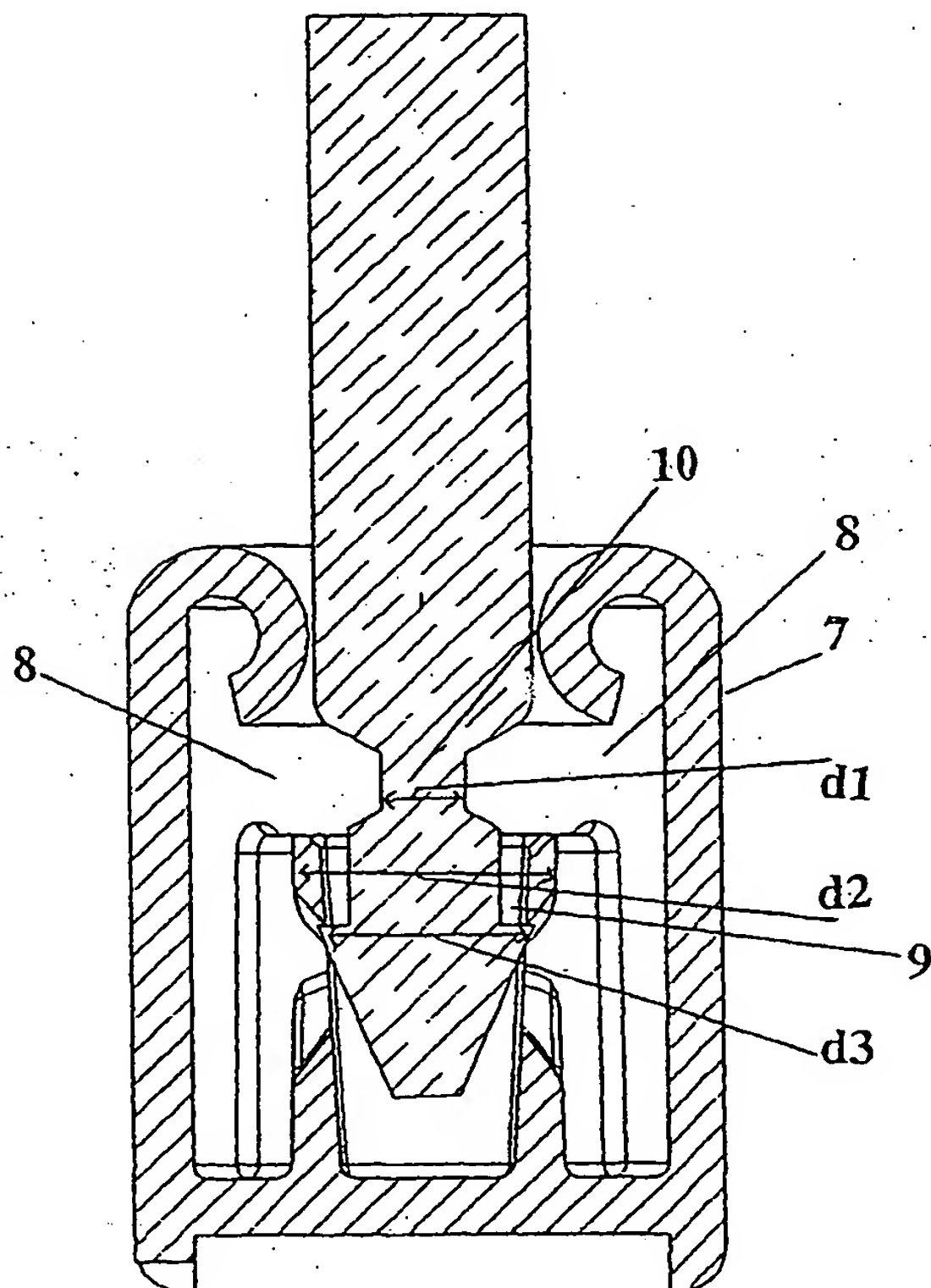
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(54) Title: SECURITY DEVICE



(57) Abstract: This invention relates to a security device which includes: an engagement head, and a receiver, wherein the receiver includes one or more at least partially flexible engagement elements adapted to define a first enclosure within the receiver, the diameter of the first enclosure being less than the diameter of the head, whereby in use said one or more flexible engagement elements are flexed to temporarily increase the diameter of the first enclosure and to admit the head into the enclosure, said engagement element or elements being adapted to resume their original shape and reduce the diameter of the first enclosure once the head is admitted to lock the head within the enclosure.

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## INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G09F3/03 B65D63/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used).

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category "	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	GB 2 163 392 A (PSP FAR EAST SDN BHD) 26 February 1986 (1986-02-26) the whole document	1, 10, 12, 19-21 2-9
X	US 4 609 218 A (CHEVILLARD PAUL F ET AL) 2 September 1986 (1986-09-02) the whole document	1, 10, 12, 19-21
X	US 5 568 952 A (RUEGG ERWIN) 29 October 1996 (1996-10-29) claim 1; figures 5-10	1
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2163392	A	26-02-1986	NONE	
US 4609218	A	02-09-1986	CA 1225514 A1 DE 3622501 A1 FR 2601338 A1 GB 2192368 A , B	18-08-1987 07-01-1988 15-01-1988 13-01-1988
US 5568952	A	29-10-1996	NONE	
US 3717369	A	20-02-1973	CA 947048 A1 CH 525814 A DE 2156679 A1 FR 2114720 A5 GB 1373248 A IT 941157 B	14-05-1974 31-07-1972 08-06-1972 30-06-1972 06-11-1974 01-03-1973

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